ASCII Data Set Files

Data sets can be stored to either ASCII or binary files. Multiple data sets can be stored in a single file and both scalar and vector data sets can be saved to the same file. The file format is identical for 2D and 3D data sets. The ASCII data set format is shown in Figure 27. A sample data set file is shown in Figure 28.

For scalar data set files, one value is listed per vertex, cell, node, or scatter point. The points are listed sequentially in ascending order according to the ids of the nodes, points, vertices, or cells. For vector data set files, one set of XYZ vector components is listed per vertex, cell, node, or scatter point. If necessary, a set of status flags can be included in the file. If the status flag is false (0), the corresponding item (node, cell, etc.) is inactive. If status flags are not included in the file, it is assumed that all items are active.

If variograms have been defined for a data set or time step of a data set within *GMS*, the variograms are saved in the data set file. The variogram cards are not documented.

```
DATASET          /* File type identifier */
OBJTYPE type     /* Type of object data set is associated with */
BEGSCL           /* Beginning of scalar data set */
OBJID id         /* Object id */
ND numdata       /* Number of data values */
NC numcells      /* Number of cells or elements */
NAME "name"      /* Data set name */
ACTTS time       /* Marks the active time step */
MAPTS time       /* Marks the time step which is mapped as elevations
*/
TS istat time    /* Time step of the following data. */
stat1            /* Status flags */
stat2
.
.
statnumcells
val1             /* Scalar data values */
val2
.
.
valnumdata
/* Repeat TS card for each time step */
ENDDS            /* End of data set */
BEGVEC           /* Beginning of vector dataset */
VECTYPE type     /* Vector at node/gridnode or element/cell */
OBJID id         /* Object id */
ND numdata       /* Number of data values */
NC numcells      /* Number of cells or elements */
NAME "name"      /* Data set name */
TS istat time    /* Time step of the following data. */
stat1            /* Status flags */
stat2
.
.
statnumcells
vx1 vy1 vz1
vx2 vy2 vz2
.
.
vnumdata vnumdata vnumdata
/* Repeat TS card for each time step */
ENDDS            /* End of data set */
/* Repeat BEGSCL and BEGVEC sequences for each data set */
```

Figure 27 ASCII Data Set File Format.

```
DATASET
OBJTYPE grid2d
BEGSCL
ACTTS 1.00000000e+00
ND 8
NC 8
NAME "trichloroethylene"
TS 1 1.00000000e+00
0
0
0
1
1
1
1
0
0.00000000e+00
0.00000000e+00
0.00000000e+00
3.24000000e+00
4.39000000e+00
2.96000000e+00
7.48000000e+00
0.00000000e+00
```

```
ENDDS
BEGVEC
VECTYPE 0
ND 8
NC 8
NAME "velocity"
TS 1 5.00000000e+00
0
0
0
1
1
1
1
0
1.60000000e+01 1.60000000e+01 3.20000000e+01
6.40000000e+01 6.40000000e+01 1.28000000e+02
1.44000000e+02 1.44000000e+02 2.88000000e+02
1.96000000e+02 1.96000000e+02 3.92000000e+02
2.25000000e+02 2.25000000e+02 4.50000000e+02
9.21600000e+03 9.21600000e+03 1.84320000e+04
9.60400000e+03 9.60400000e+03 1.92080000e+04
9.80100000e+03 9.80100000e+03 1.96020000e+04
ENDDS
```

Figure 28 Sample ASCII Data Set File.

The card types used in the scalar data set file format are as follows:

Card Type	**DATASET**
Description	File type identifier. Must be on first line of file. No fields.
Required	YES

Card Type	**OBJTYPE**		
Description	Identifies the type of objects that the data sets in the file are associated with.		
Required	YES. If card does not exist, the file can only be read through the Data Browser. The data sets would then be assigned to the objects corresponding to the active module.		
Format	`OBJTYPE type`		
Sample	`OBJTYPE tin`		
Field	*Variable*	*Value*	*Description*
1	type	tin	TINs
		mesh2d	2D meshes
		grid2d	2D grids
		scat2d	2D scatter points
		mesh3d	3D meshes
		grid3d	3D grids
		scat3d	3D scatter points

Card Type	**BEGSCL**
Description	Scalar data set file identifier. Marks beginning of scalar data set. No fields.
Required	YES

Card Type	**BEGVEC**
Description	Vector data set file identifier. Marks beginning of vector data set. No fields.
Required	YES

Card Type	**ACTTS**		
Description	Used to mark the active data set. The card should be placed after the BEGSCL or BEGVEC card of the active data set and the active time step should be listed.		
Required	NO		
Format	`ACTTS time`		
Sample	`ACTTS 0.00`		
Field	*Variable*	*Value*	*Description*
1	`time`	±	The time corresponding to the active time step. Use 0.0 for steady state data sets.

Card Type	**MAPTS**		
Description	Used to mark the data set which is mapped to the object elevations. The card should be placed after the BEGSCL or BEGVEC card of the mapped data set and the mapped time step should be listed.		
Required	NO		
Format	`MAPTS time`		
Sample	`MAPTS 0.00`		
Field	*Variable*	*Value*	*Description*
1	`time`	±	The time corresponding to the mapped time step. Use 0.0 for steady state data sets.

Card Type	**OBJID**		
Description	The unique id of the object the data set is associated with.		
Required	This card is required for data sets associated with TINs and scatter point sets.		
Format	`OBJID id`		
Sample	`OBJID 2383`		
Field	*Variable*	*Value*	*Description*
1	`id`	+	The unique id of the object.

Card Type	**VECTYPE**			
Description	Identifies the type of vector data that will be read and where to apply it.			
Required	This card is only required if the vector data is associated with elements/cells. If this card is not present, it is assumed that the data are associated with nodes/gridnodes.			
Field	*Variable*	*Size*	*Value*	*Description*
1	type	4 byte int	0	The vectors will be applied to the nodes/gridnodes.
			1	The vectors will be applied to the elements/cells.

Card Type	**ND**		
Description	The number of data values that will be listed per time step. This number should correspond to the total number of vertices, nodes, cells centers (cell-centered grid), cell corners (mesh-centered grid), maximum node id (meshes) or scatter points.		
Required	YES		
Format	`ND numdata`		
Sample	`ND 10098`		
Field	*Variable*	*Value*	*Description*
1	`numdata`	+	The number of items. At each time step, numdata values are printed.

Card Type	**NC**		
Description	This number should correspond to the maximum element id (meshes) or the number of cells (grids).		
Required	YES		
Format	`NC numcells`		
Sample	`NC 3982`		
Field	*Variable*	*Value*	*Description*
1	numcells	+	The number of elements or cells.

Card Type	**NAME**		
Description	The name of the data set.		
Required	YES		
Format	`NAME "name"`		
Sample	`NAME "Total head"`		
Field	*Variable*	*Value*	*Description*
1	"name"	str	The name of the dataset in double quotes.

Card Type	**TS**		
Description	Marks the beginning of a new time step, indicates if stat flags are given, and defines the time step value, status flags, and scalar data values for each item.		
Required	YES		

Format	`TS istat time`
	`stat1`
	`stat2`
	`.`
	`.`
	`stat numcells`
	`val1`
	`val2`
	`.`
	`.`
	`valnumdata`		

Sample	`TS 1 12.5`
	`0`
	`1`
	`1`
	`1`
	`34.5`
	`74.3`
	`58.4`
	`72.9`		

Field	*Variable*	*Value*	*Description*
1	istat	0 1	Use status flags from previous time step. For first time step, this indicates that all cells are active. Status flags will be listed.
2	time	+	The time step value. If only one time step exists, time is not required
3 - (nd+2)	stat	0,1	The status of each item. If active, stat=1. If inactive stat=0. Omitted if i=0 on STAT card.
(nd+2) - (2nd+2)	val	±	The scalar data values of each item.

Card Type	**ENDDS**
Description	Marks the end of a scalar or vector data set. No fields.
Required	YES